

SPECIFICATIONS
FOR
EROSION & SEDIMENT CONTROL
CITY OF EDINA, MINNESOTA
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Revised January 2014

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SPECIFICATIONS
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1. **GENERAL**

All storm water management/erosion control measures and controlling erosion/establishing vegetation measures shall be in accordance with MnDOT 2573 and 2575, respectively, Erosion Control Plans and Specifications, Storm Water Pollution Prevention Plan and any applicable permit requirements.

2. **SILT FENCE**

Silt fence shall be of the type and kind as indicated in the Contract and shall be constructed in accordance with MnDOT 3886. Silt fence shall be installed on the contour (vs. up and down a hill) and constructed so that flow cannot bypass the ends (J-hook). Continuous silt fence segments shall not exceed 600-ft. All silt fence shall be orange in color. All silt fence shall be inspected and maintained to preserve its effectiveness in accordance with the requirements of the Storm Water Pollution Prevention Plan. No additional compensation shall be made for repairs.

3. **INLET PROTECTION**

Storm drain inlet protection shall be done in accordance with the applicable MnDOT Standard Specifications and the following:

Storm drain inlet protection shall consist of the Best Management Practices and devices for preventing sedimentation from entering the underground drainage systems. Storm drain inlet protection applies to manholes, catch basins, curb inlets, and other drop type inlets constructed for the ingress of surface water runoff into underground drainage systems. Storm drain inlet protection as described in this Special Provision does not include practices to protect culverts.

The Contractor must protect all storm drain inlets with sediment capture devices prior to soil disturbing activities that may result in sediment laden storm water runoff entering the inlet. The Contractor shall provide effective storm drain inlet protection over the life of the Contract until all surfaces with potential for discharging sediment to an inlet have been paved or stabilized. As the Contractor's operations change,

the storm drain inlet Best Management Practice for sediment control must be modified by the Contractor to ensure proper effectiveness for sediment capture.

The Contractor is responsible for preventing or minimizing the potential for unsafe conditions, flooding, or siltation problems. For example, devices must be regularly cleaned out and emergency overflow must be an integral part of the device to reduce the flooding potential; and devices must be placed such that driving hazards or obstructions are not created.

The Contractor shall clean, remove sediment, or replace storm drain inlet protection devices on a routine basis such that the devices are fully functional for the next rainstorm event. Removal and disposal of trapped sediment in inlet protection devices shall be incidental to the Project. Sediment deposited in and/or plugging drainage systems is the responsibility of the Contractor and shall be removed at no expense to the Department

MATERIALS:

3.1 ROCK LOG

All aggregate shall be washed before placed in a rock bag. Rock shall be supplied in accordance with MnDOT 3137.2 Class D with a gradation in accordance with Table 3137-4 CA-00 through CA-50. The casing material for the rock shall be between 1.22 m and 3 m [4 feet and 10 feet] in length and between 100 mm [4 inches] and 150 mm [6 inches] in diameter when filled with rock. The casing material shall have a minimum grab tensile strength of 60 kg [130 pounds] and a minimum Mullen Burst Strength of 1200 kPa [175 psi].

3.2 COMPOST LOG

Shall consist of a blend of 30-40% weed free compost as per MnDOT 3890 Grade 2 and 60-70% partially decomposed wood chips. The compost/wood blend material shall pass a 50 mm [2 inch] sieve with a minimum of 70% retained on the 10 mm [3/8 inch] sieve, in accordance with TMECC 02.02-B, "Sample Sieving for Aggregate Size Classification. The compost/wood chip blend shall be pneumatically shot into a geotextile cylindrical bag. The geotextile bag shall consist of a knitted material with openings of 10 mm [3/8 inch] and contain the compost/wood chip material while not limiting water infiltration. The encased compost shall form a cylindrical log that is a maximum of 55 m [180 feet] and approximately 200 mm [8 inches] in diameter.

3.4 SEDIMENT CONTROL INLET HAT

Sediment control inlet hats shall be a polyethylene hat-like structure covering the inlet with small weep holes on the side providing a filtering function of the storm water runoff and a large opening above the weep holes for emergency overflow.

3.5 SILT FENCE RING AND ROCK LOG OR ROCK FILTER BERM COMBINATION

Silt fence shall meet the requirements of Section S-3886 (TYPE HAND INSTALLED) of these Special Provisions. Silt fence shall be placed in a circular configuration around the inlet to form a minimum 1.5 m [5 feet] diameter zone of protection. Rock logs, as described above, shall line the outside toe of the silt fence. Rock Filter berms shall consist of 3882 Type 9 Mulch.

3.6 POP-UP HEAD

Pop-up head inlet protection shall form a solid steel plate over the inlet casting or solid steel box that fits inside a grate assembly with the exception of a center cylindrical drain tube riser. The tube riser shall be fully extended when providing drainage functions and have holes that provide filtering capabilities. The tube riser shall be covered with a removable knit type geotextile that provides additional sediment filtering capabilities. The tube riser shall be able to be pushed down flat to the steel plate to allow construction vehicles to drive over it, facilitate cleanout, or to shut off drainage to the inlet.

3.7 FILTER BAG INSERT

Filter bag with Frame inserts shall consist of a replaceable reinforced filter bag suspended from a retainer ring, or frame that fits within a grate frame. The filter bag shall be constructed of a polypropylene filter geotextile fabric with a minimum weight of 222 g/m^2 [4 ounces per square yard], a minimum flow rate of $5908 \text{ L/minute/m}^2$ [145 gallons per minute per square foot], a minimum permittivity of 2 per second, and designed for a minimum silt and debris capacity of 0.57 m^3 [2 square foot]. The filter bag shall be reinforced with an outer polyester mesh fabric with a minimum weight of 222 g/m^2 [4 ounces per square yard]. The filter bag shall be suspended from a galvanized steel ring or frame, conforming to ASTM-A36 utilizing a stainless steel band and locking clamp. The frame shall be designed with an overflow feature to prevent any ponding between scheduled cleanings and replacement of the filter bag. Overflow capacity shall be at a minimum equal to the design flow capacity of the structure's grate opening.

3.8 OTHER

Devices approved by the Department's Erosion Control Engineering Unit and on file on the web under the Materials Engineering Section's Approved Products List can be furnished as meeting this specification requirement

The Contractor shall clean, remove sediment or replace control devices upon completion of the Contract work unless otherwise specified in the Contract or directed by the Engineer. All removed materials become the property of the Contractor.

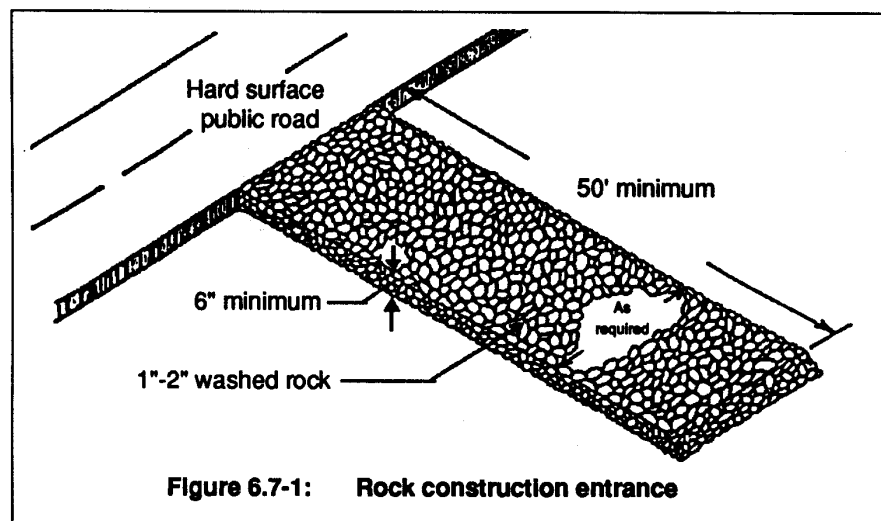
The Contractor shall spread accumulated sediment to form a suitable surface for turf establishment or dispose of the sediment off of the Right of Way in accordance with MnDOT 2104.3D. The Contractor shall shape the area to permit natural drainage. All work shall be done to the satisfaction of the Engineer.

MEASUREMENT AND PAYMENT

Measurement will be made by the number of individual inlets protected over the life of the Contract and as indicated on the Plan. No measurement of the number and type of individual devices used will be made.

4.0 TEMPORARY ROCK CONSTRUCTION ENTRANCE

The rock used for gravel pads should be 2 to 3-inch size such as MnDOT CA-15 or CA-25 coarse aggregate. The aggregate should be placed in a layer at least 6 inches thick.



The rock entrance should be at least 50 feet long; however, longer entrances may be required to achieve adequate cleaning.

A filter fabric may be needed under the rock to prevent migration of mud from the underlying soil into the stone.

5.0 STREET SWEEPING

Tracking of dirt onto public roads during hauling and general day-to-day construction operations will require periodic cleaning of these roadways. Scraping and vacuum assisted sweeping or a combination may be required. Power brooms or "sidewinder" type devices are not acceptable for cleaning of the roadway.

For the duration of the project, a gravel construction entrance shall be maintained at the entrance/exit to adjacent roadways to minimize the tracking of dirt outside of the project limits. The gravel shall be obtained from the existing roadway base/bituminous reclamation areas. The length of the gravel construction entrance shall be a minimum of 50-ft for the full width of the roadway.

Any sediment tracked onto City streets or onto streets that drain into storm sewer systems shall be kept clean by the Contractor; sediment shall be removed within 12 hours of discovery. If the Contractor fails to remove all of the tracked sediment from streets the City shall remove any sediment at the Contractor's expense.

6.0 SURFACE ROUGHENING

6.1 Cut Slope Applications for Areas Which Will Not be Mowed

Cut slopes with a gradient steeper than 3:1 shall be stair-step graded or grooved (Plate 1.60a and 1.60B).

Stair-step grading may be carried out on any material soft enough to be ripped with a bulldozer. Slopes consisting of soft rock with some subsoil are particularly suited to stair-step grading.

The ratio of the vertical cut distance to the horizontal distance shall be less than 1:1 and the horizontal portion of the "step" shall slope toward the vertical wall.

Individual vertical cuts shall not be more than 30 inches on soft soil materials and not more than 40 inches in rock materials.

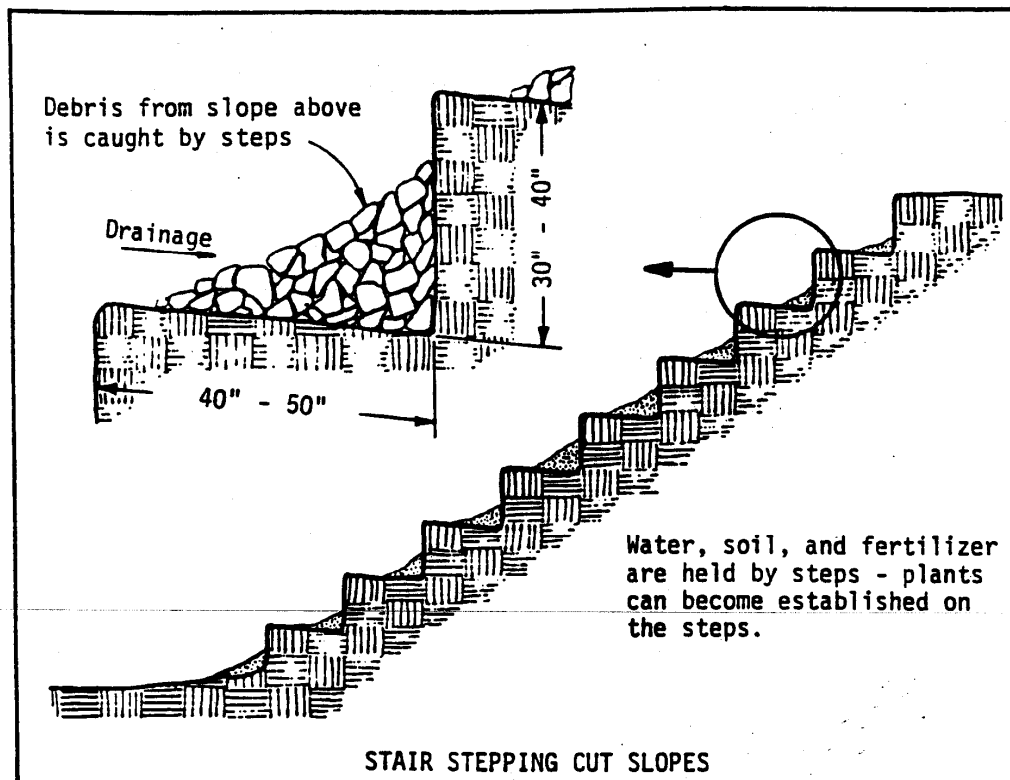
Grooving consists of using machinery to create a series of ridges and depressions which run perpendicular to the slope (on the contour).

Grooves may be made with any appropriate implement which can be safely operated on the slope and which will not cause undue compaction. Suggested implements include discs, tillers, spring harrows, and the teeth on

a front-end loader bucket. Such grooves shall not be less than 3 inches deep nor further than 15 inches apart.

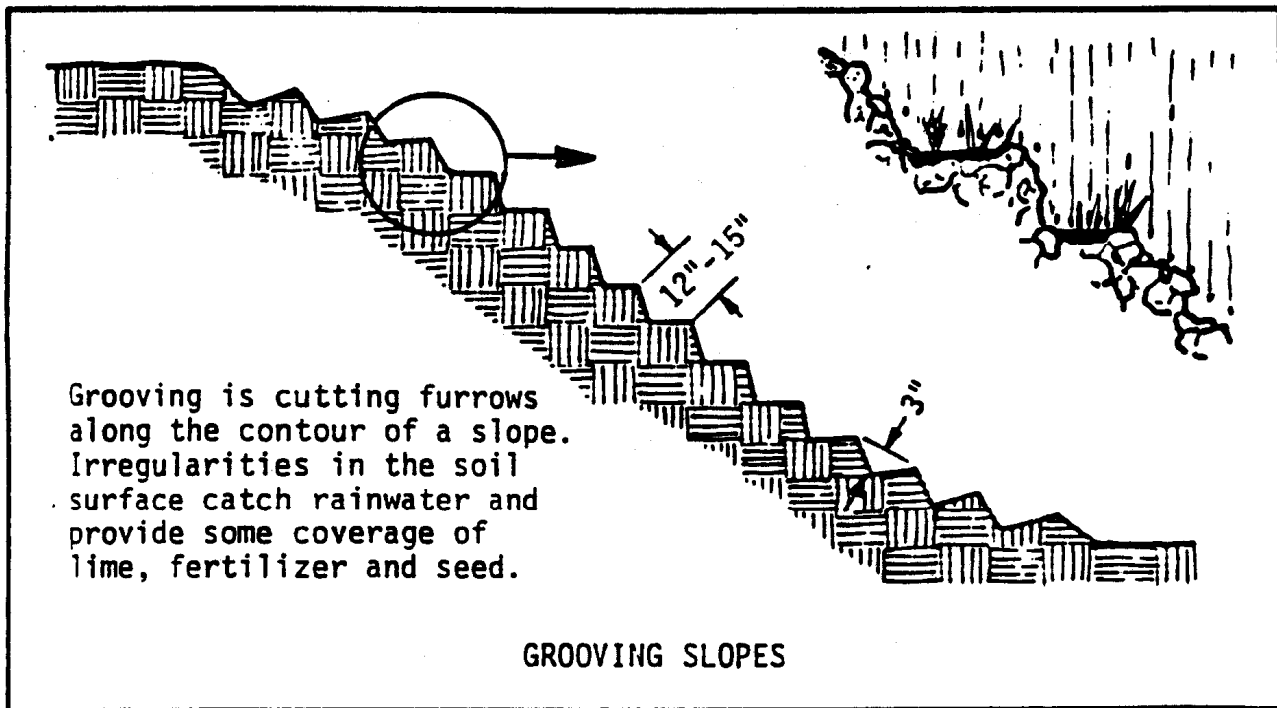
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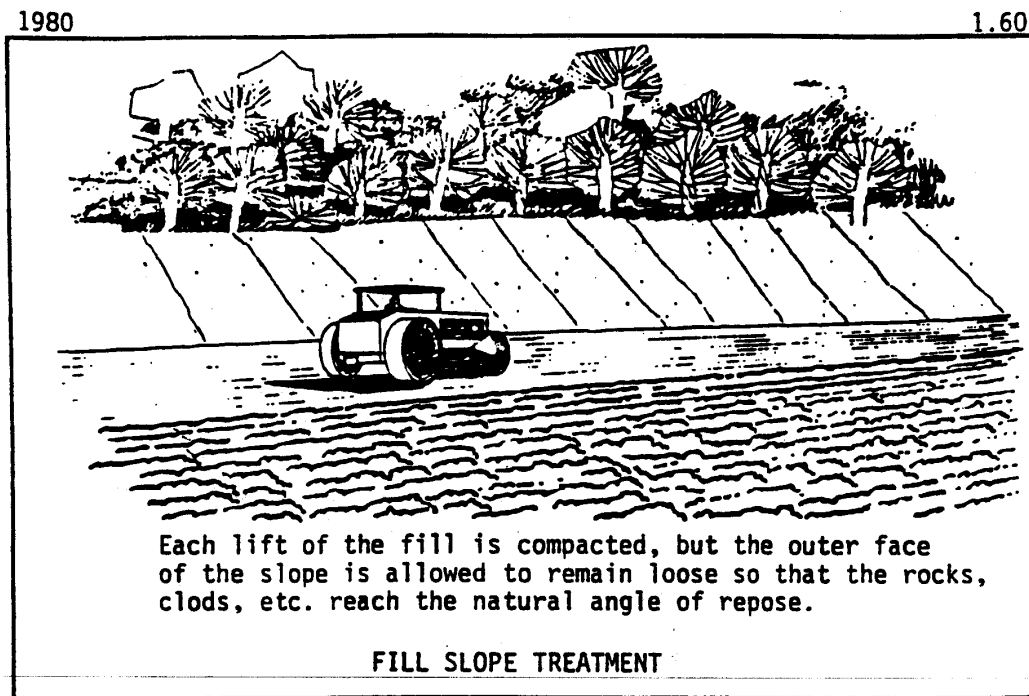
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Plate 1.60a



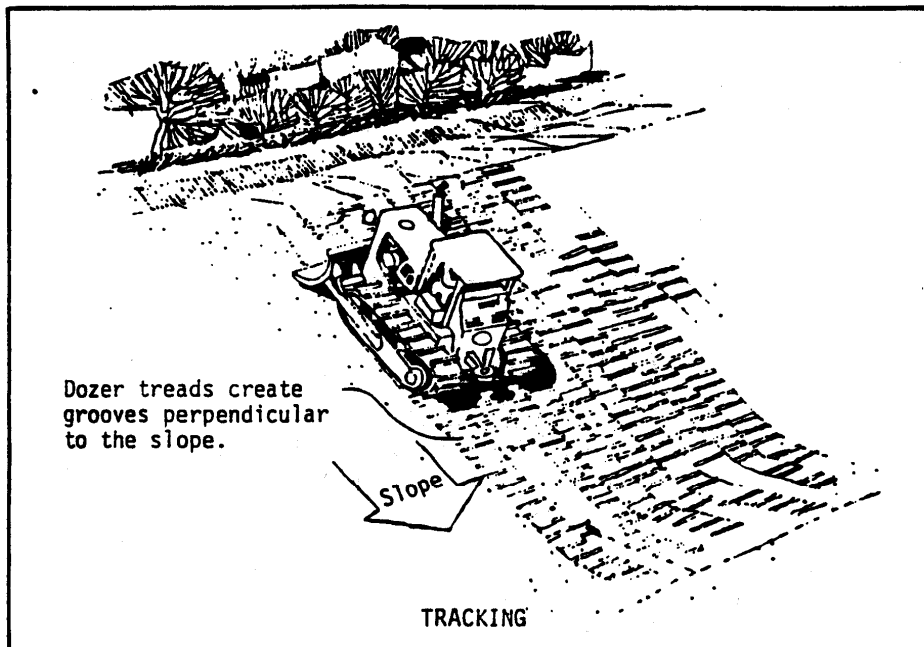
Source: Va SWCC

Plate 1.60b



Source: Va SWCC

Plate 1.60c



Source: Michigan Soil Erosion and Sedimentation Control Guidebook

Plate 1.60d

6.2 Fill Slope Applications for Areas Which Will Not Be Mowed

Fill slopes with a gradient steeper than 3:1 shall be grooved or allowed to remain rough as they are constructed. Method (1) or (2) below may be used.

6.2.1 Groove according to #2, above.

6.2.2 As lifts of the fill are constructed, soil and rock materials may be allowed to fall naturally onto the slope surface (Plate 1.60c).

Colluvial materials (soil deposits at the base of the slopes or from old stream beds) shall not be used in fills as they flow when saturated.

At no time shall slopes be bladed or scraped to produce a smooth, hard surface.

6.3 Cuts, Fills, and Graded Areas Which Will be Mowed

Mowed slopes should not be steeper than 3:1. Excessive roughness is undesirable where mowing is planned.

These areas may be roughened with shallow grooves such as remain after tilling, discing, harrowing, raking, or use of a cultipacker-seeder. The final pass of any such tillage implement shall be on the contour (perpendicular to the slope.)

Grooves formed by such implements shall be not less than one inch deep and not further than 12 inches apart.

Fill slopes which are left rough as constructed may be smoothed with a dragline or pickchain to facilitate mowing.

6.4 Roughening with Tracked Machinery

Roughening with tracked machinery on clayey soils is not recommended unless no alternatives are available. Undue compaction of surface soil results from this practice. Sandy soils do not compact severely, and may be tracked. In no case is tracking as effective as the other roughening methods described.

When tracking is the chosen surface roughening technique, it shall be done by operating tracked machinery up and down the slope to leave horizontal depressions in the soil. As few passes of the machinery should be made as possible to minimize compaction.

6.5 Seeding

Roughened areas shall be seeded and mulched as soon as possible to obtain optimum seed germination and seedling growth.

[End Erosion & Sediment Control]